

June 09, 2015

June 05, 2015

Mr. Scot Fitzgerald
CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352

Re: CHPRC SAF I15-025
Work Order: 372924
SDG: GEL372924

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on May 13, 2015. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4505.

Sincerely,



Heather Shaffer
Project Manager

Purchase Order: 300071JDBA 7H
Chain of Custody: I15-025-006, I15-025-007, I15-025-024 and I15-025-025
Enclosures



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Case Narrative

June 09, 2015

General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF I15-025
SDG: GEL372924

June 05, 2015

Laboratory Identification:

GEL Laboratories LLC
2040 Savage Road
Charleston, South Carolina 29407
(843) 556-8171

Summary

Sample receipt

The sample(s) arrived at GEL Laboratories, LLC, Charleston, South Carolina on May 13, 2015, for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

Items of Note All efforts were made by the lab to meet any short hold times. Samples that were analyzed outside of the initial hold time but still within 2X hold time will be noted in the lab case narrative and DER

Sample Identification

The laboratory received the following samples:

| <u>Laboratory Identification</u> | <u>Sample Description</u> |
|---|----------------------------------|
| 372924001 | B30XV0 |
| 372924002 | B30XV1 |
| 372924003 | B30XT8 |
| 372924004 | B30XT9 |

Case Narrative

Sample analyses were conducted using methodology as outlined in GEL Laboratories, LLC (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

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Data Package

The enclosed data package contains the following sections: General Narrative, Chain of Custody and Supporting Documentation, and data from the following fractions: General Chemistry and Radiochemistry.

This package, to the best of my knowledge, is in compliance with the SOW, both technically and for completeness, including a full description of, explanation of, and corrective actions for, any and all deviations, from either the analyses requested or the case narrative requested. Release of the data contained in this hard copy data package has been authorized by the Laboratory Analytical Manager (or designee) and the laboratory's client services representative as verified by their signatures on this report.



Heather Shaffer
Project Manager

Chain of Custody and Supporting Documentation

| | | | | | | | | | |
|---|--------|--|---------|--|-------------------|------------------------|------------------|---|--|
| CH2M Hill Plateau Remediation Company | | | | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 372924 | | | | C.O.C. # I15-025-024 | |
| Collector J.R. Aguilar/CHPRC | | Contact/Requester Karen Waters-Husted | | Telephone No. 509-376-4650 | | Page 1 of 1 | | | |
| SAF No. I15-025 | | Sampling Origin Hanford Site | | Purchase Order/Charge Code 300071 | | | | | |
| Project Title 200-UP-1, MAY 2015 | | Logbook No. HNF-N-506 70/ 83 | | Ice Chest No. 605-238 | | | | | |
| Shipped To (Lab) GEL Laboratories, LLC | | Method of Shipment Commercial Carrier | | Bill of Lading/Air Bill No. 773582747381 | | | | | |
| Protocol CERCLA | | Priority: 30 Days | | Offsite Property No. 5635 | | | | | |
| POSSIBLE SAMPLE HAZARDS/REMARKS *** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1 | | | | SPECIAL INSTRUCTIONS N/A | | Hold Time | | Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | |
| Sample No. | Filter | * | Date | Time | No/Type Container | Sample Analysis | Holding Time | Preservative | |
| B30XV0 | N | W | 5-12-15 | 0730 | 1x250-mL G/P | 9056_ANIONS_IC: COMMON | 28 Days/48 Hours | Cool <=6C | |

June 09, 2015

| | | | | | | | | |
|---------------------------------------|-------|------|-------------------------------|--|-------|------|-------------------------------|---|
| Relinquished By J.R. Aguilar/CHPRC | Print | Sign | Date/Time MAY 12 2015 1015 | Received By L.D. Wall CHPRC | Print | Sign | Date/Time MAY 12 2015 1015 | Matrix * |
| Relinquished By L.D. Wall CHPRC | Print | Sign | Date/Time MAY 12 2015 1400 | Received By FEDEX | Print | Sign | Date/Time | S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquids SO = Solid T = Tissue SL = Sludge WL = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other |
| Relinquished By Feelix | Print | Sign | Date/Time | Received By C. Seago CHPRC | Print | Sign | Date/Time 05/13/15 0845 | |
| Relinquished By | Print | Sign | Date/Time | Received By | Print | Sign | Date/Time | |
| FINAL SAMPLE DISPOSITION | | | | Disposal Method (e.g., Return to customer, per lab procedure, used in process) | | | | Date/Time |

| | | | | | | | |
|--|-----------------------|--------------------|---------------------|---|---------------|------------------------|------------------|
| CH2MHill Plateau Remediation Company | | | | C.O.C. # I15-025-025 | | | |
| | | | | Page 1 of 1 | | | |
| 372924 | | | | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | |
| Collector | J.R. Aguilar/CHPRC | Contact/Requester | Karen Waters-Husted | Telephone No. | 509-376-4650 | | |
| SAF No. | I15-025 | Sampling Origin | Hanford Site | Purchase Order/Charge Code | 300071 | | |
| Project Title | 200-UP-1, MAY 2015 | Logbook No. | HNF-N-506 70 / 83 | Ice Chest No. | 605-539 | | |
| Shipped To (Lab) | GEL Laboratories, LLC | Method of Shipment | Commercial Carrier | Bill of Lading/Air Bill No. | 77358576 6776 | | |
| Protocol | CERCLA | Priority: | 30 Days | Offsite Property No. | 5036 | | |
| POSSIBLE SAMPLE HAZARDS/REMARKS | | | | SPECIAL INSTRUCTIONS | | | |
| ** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1 | | | | Hold Time | | | |
| | | | | Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | | | |
| Sample No. | Filter | * | Date | No/Type Container | Time | Sample Analysis | Holding Time |
| B30XV1 | N | W | 5-12-15 | 1x250-mL G/P | 1123 | 9056_ANIONS_IC: COMMON | 28 Days/48 Hours |
| | | | | Preservative | | | |
| | | | | Cool <=6C | | | |

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| | | | | | | | | |
|---------------------------------------|-----------|------|-------------------------------|--|--------------------|----------|-------------------------------|---|
| Relinquished By J.R. Aguilar/CHPRC | Print | Sign | Date/Time MAY 12 2015 1140 | Received By L.D. Wall CHPRC | Print L.D. Wall | Sign | Date/Time MAY 12 2015 1140 | Matrix * |
| Relinquished By L.D. Wall CHPRC | Print | Sign | Date/Time MAY 12 2015 1400 | Received By C. Seago CHPRC | Print FEDEX | Sign | Date/Time 05/13/15 0845 | S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquids SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other |
| Relinquished By Fedex | Print | Sign | Date/Time MAY 12 2015 1400 | Received By C. Seago CHPRC | Print C. Seago | Sign | Date/Time 05/13/15 0845 | |
| FINAL SAMPLE DISPOSITION | | | | Disposal Method (e.g., Return to customer, per lab procedure, used in process) | | | | Date/Time |
| PRINTED O 3/26/2015 | | | | A-6004-842 (REV 2) | | | | |

| | | | | |
|--|-----------------------|---|---------------------|---|
| CH2MHill Plateau Remediation Company | | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | C.O.C. # I15-025-006 |
| | | 372924 | | Page 1 of 1 |
| Collector | J.R. Aguilar/CH2M | Contact/Requester | Karen Waters-Husted | |
| SAF No. | I15-025 | Sampling Origin | Hanford Site | |
| Project Title | 200-UP-1, MAY 2015 | Logbook No. | HNF-N-506 | 70 / 83 |
| Shipped To (Lab) | GEL Laboratories, LLC | Method of Shipment | Commercial Carrier | |
| Protocol | CERCLA | Priority: | 30 Days | PRIORITY |
| POSSIBLE SAMPLE HAZARDS/REMARKS | | SPECIAL INSTRUCTIONS | | Hold Time |
| *** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1 | | N/A | | Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |

| Sample No. | Filter | * | Date | Time | No/Type Container | Sample Analysis | Holding Time | Preservative |
|------------|--------|---|---------|------|-------------------|-------------------------------|--------------|---------------|
| B30XT8 | N | W | 5-12-15 | 0730 | 2x4-L G/P | I129LL_SEP_LEPS_GS_LL: COMMON | 6 Months | None |
| B30XT8 | N | W | | | 1x500-mL G/P | KPA_UTOT: COMMON | 6 Months | HNO3 to pH <2 |
| B30XT8 | N | W | | | 1x500-mL G/P | TC99_EIE_LSC: COMMON | 6 Months | HNO3 to pH <2 |
| B30XT8 | N | W | 5-12-15 | 0730 | 1x500-mL P | TRITIUM_DIST_LSC: COMMON | 6 Months | None |

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| | | | | | | | |
|---|-------|------|--------------------------------------|---------------------------------|-------|------|--------------------------------------|
| Relinquished By J.R. Aguilar/CH2M | Print | Sign | Date/Time MAY 12 2015 1015 | Received By L.D. Wall | Print | Sign | Date/Time MAY 12 2015 1015 |
| Relinquished By L.D. Wall | Print | Sign | Date/Time MAY 12 2015 1400 | Received By FEDEX | Print | Sign | Date/Time MAY 12 2015 1400 |
| Relinquished By FEDEX | Print | Sign | Date/Time 05/13/15 0815 | Received By C. Seagle | Print | Sign | Date/Time 05/13/15 0815 |
| Relinquished By | Print | Sign | Date/Time | Received By | Print | Sign | Date/Time |

| | | | | | |
|---------------------------------|--|--|--|-------------|-----------|
| FINAL SAMPLE DISPOSITION | | Disposal Method (e.g., Return to customer, per lab procedure, used in process) | | Disposed By | Date/Time |
| | | | | | |

| | |
|---------------|-------------------|
| Matrix * | |
| S = Soil | DS = Drum Solids |
| SE = Sediment | DL = Drum Liquids |
| SO = Solid | T = Tissue |
| SL = Sludge | WI = Wipe |
| W = Water | L = Liquid |
| O = Oil | V = Vegetation |
| A = Air | X = Other |

June 09, 2015

| | | | | | |
|---|--|---|--|---|--|
| CH2M Hill Plateau Remediation Company | | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | C.O.C. # I15-025-007 | |
| Collector J.R. Aguilar/CHPRC | | Contact/Requester Karen Waters-Husted | | Telephone No. 509-376-4650 | |
| SAF No. I15-025 | | Sampling Origin Hanford Site | | Purchase Order/Charge Code 300071 | |
| Project Title 200-UP-1, MAY 2015 | | Logbook No. HNF-N-506 70 / 83 | | Ice Chest No. 6WS-539 | |
| Shipped To (Lab) GEL Laboratories, LLC | | Method of Shipment Commercial Carrier | | Bill of Lading/Air Bill No. 1773585766776 | |
| Protocol CERCLA | | Priority: 30 Days | | Offsite Property No. 5636 | |
| POSSIBLE SAMPLE HAZARDS/REMARKS *** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1 | | SPECIAL INSTRUCTIONS N/A | | Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | |

| Sample No. | Filter | * | Date | Time | No/Type Container | Sample Analysis | Holding Time | Preservative |
|------------|--------|---|---------|------|-------------------|-------------------------------|--------------|---------------|
| B30XT9 | N | W | 5-12-15 | 1123 | 2x4-L G/P | 1129LL_SEP_LEPS_GS_LL: COMMON | 6 Months | None |
| B30XT9 | N | W | | | 1x500-mL G/P | KPA_UTOT: COMMON | 6 Months | HNO3 to pH <2 |
| B30XT9 | N | W | | | 1x500-mL G/P | TC99_EIE_LSC: COMMON | 6 Months | HNO3 to pH <2 |
| B30XT9 | N | W | 5-12-15 | 1123 | 1x500-mL P | TRITIUM_DIST_LSC: COMMON | 6 Months | None |

| | | | | | | | |
|--|-------|------|--------------------------------------|---------------------------------------|-------|------|--------------------------------------|
| Relinquished By J.R. Aguilar/CHPRC | Print | Sign | Date/Time MAY 12 2015 1140 | Received By L.D. Wall CHPRC | Print | Sign | Date/Time MAY 12 2015 1140 |
| Relinquished By 10 of 5 | Print | Sign | Date/Time MAY 12 2015 1400 | Received By L.D. Wall CHPRC | Print | Sign | Date/Time MAY 12 2015 1400 |
| Relinquished By 10 of 5 | Print | Sign | Date/Time MAY 12 2015 1400 | Received By C. Seagle CHPRC | Print | Sign | Date/Time 05/13/15 0845 |

| | | | | | | | |
|-----------------------------------|-------|------|--------------------------------------|---------------------------------------|-------|------|-----------------------------------|
| Relinquished By 10 of 5 | Print | Sign | Date/Time MAY 12 2015 1400 | Received By C. Seagle CHPRC | Print | Sign | Date/Time 05/13/15 0845 |
|-----------------------------------|-------|------|--------------------------------------|---------------------------------------|-------|------|-----------------------------------|

| | | | |
|--------------------------|--|-------------|-----------|
| FINAL SAMPLE DISPOSITION | Disposal Method (e.g., Return to customer, per lab procedure, used in process) | Disposed By | Date/Time |
|--------------------------|--|-------------|-----------|

PRINTED O 3/26/2015

A-6004-842 (REV 2)



June 09, 2015

SAMPLE RECEIPT & REVIEW FORM

| | | | | | |
|--|-----|-------------------------------------|--|--|--|
| Client: <u>CPLC</u> | | | SDG/AR/COC/Work Order: <u>372924</u> | | |
| Received By: <u>CAS</u> | | | Date Received: <u>5/13/15</u> | | |
| Suspected Hazard Information | Yes | No | *If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation. | | |
| COC/Samples marked as radioactive? | | <input checked="" type="checkbox"/> | Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0 cpm</u> | | |
| Classified Radioactive II or III by RSO? | | <input checked="" type="checkbox"/> | If yes, Were swipes taken of sample containers < action levels? | | |
| COC/Samples marked containing PCBs? | | <input checked="" type="checkbox"/> | | | |
| Package, COC, and/or Samples marked as beryllium or asbestos containing? | | <input checked="" type="checkbox"/> | If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group. | | |
| Shipped as a DOT Hazardous? | | <input checked="" type="checkbox"/> | Hazard Class Shipped: UN#: | | |
| Samples identified as Foreign Soil? | | <input checked="" type="checkbox"/> | | | |

| Sample Receipt Criteria | Yes | NA | No | Comments/Qualifiers (Required for Non-Conforming Items) |
|---|-------------------------------------|----|----|--|
| 1 Shipping containers received intact and sealed? | <input checked="" type="checkbox"/> | | | Circle Applicable: Seals broken Damaged container Leaking container Other (describe) |
| 2 Samples requiring cold preservation within (0 ≤ 6 deg. C)?* | <input checked="" type="checkbox"/> | | | Preservation Method: <u>ice bags</u> Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius <u>2.2°C, 2.9°C</u> |
| 2a Daily check performed and passed on IR temperature gun? | <input checked="" type="checkbox"/> | | | Temperature Device Serial #: <u>E4092024132</u> Secondary Temperature Device Serial # (if Applicable): |
| 3 Chain of custody documents included with shipment? | <input checked="" type="checkbox"/> | | | |
| 4 Sample containers intact and sealed? | <input checked="" type="checkbox"/> | | | Circle Applicable: Seals broken Damaged container Leaking container Other (describe) |
| 5 Samples requiring chemical preservation at proper pH? | <input checked="" type="checkbox"/> | | | Sample ID's, containers affected and observed pH: If Preservation added, Lot#: |
| 6 Do Low Level Perchlorate samples (EPA 6850) have headspace as required? | <input checked="" type="checkbox"/> | | | Sample ID's and containers affected: |
| 7 VOA vials free of headspace (defined as < 6mm bubble)? | <input checked="" type="checkbox"/> | | | Sample ID's and containers affected: |
| 8 Are Encore containers present? | <input checked="" type="checkbox"/> | | | (If yes, immediately deliver to Volatiles laboratory) |
| 9 Samples received within holding time? | <input checked="" type="checkbox"/> | | | ID's and tests affected: |
| 10 Sample ID's on COC match ID's on bottles? | <input checked="" type="checkbox"/> | | | Sample ID's and containers affected: |
| 11 Date & time on COC match date & time on bottles? | <input checked="" type="checkbox"/> | | | Sample ID's affected: |
| 12 Number of containers received match number indicated on COC? | <input checked="" type="checkbox"/> | | | Sample ID's affected: |
| 13 Are sample containers identifiable as GEL provided? | <input checked="" type="checkbox"/> | | | |
| 14 COC form is properly signed in relinquished/received sections? | <input checked="" type="checkbox"/> | | | |
| 15 Carrier and tracking number. | <input checked="" type="checkbox"/> | | | Circle Applicable: <u>FedEx Air</u> FedEx Ground UPS Field Services Courier Other <u>7735 8576 6776 - 2.2°C</u> <u>7735 8274 7381 - 2.9°C</u> |

Comments (Use Continuation Form if needed):

Data Review Qualifier Definitions

Project Specific Qualifier Definitions for GEL Client Code: CPRC

| Code | Status | Qualifier Definition | CofA | Department | Fraction | Additional Comments |
|------|------------|---|------|-------------------|---------------|--|
| U | Programmed | Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error. | Y | | | Includes MDA, TPU, count uncert. |
| J | Programmed | The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated | Y | Organics | | Organics only |
| P | Programmed | Aroclor target analyte with greater than 25% difference between column analyses. | Y | Organics | | PCB only |
| C | Manual | Analyte has been confirmed by GC/MS analysis | Y | Organics | Pesticide | IF GC/MS confirmation was attempted but unsuccessful do not qualify with C |
| B | Programmed | The analyte was detected in both the associated QC blank and in the sample. | Y | Organics | | |
| E | Manual | Concentration exceeds the calibration range of the instrument | Y | Organics | | Qualifier Uploaded |
| A | Manual | The TIC is a suspected aldol-condensation product | Y | Organics | Semi-Volatile | Uploaded with TIC |
| X | Programmed | Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier | Y | | | Replaces H Hold Date In RAD replaces UI. Same usage as standard X as well. |
| N | Programmed | Spike Sample recovery is outside control limits. | Y | | | |
| * | Programmed | Duplicate analysis not within control limits | Y | Inorganics | | |
| > | Programmed | Result greater than quantifiable range or greater than upper limit of the analysis range | Y | General Chemistry | | |
| Z | Manual | Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier | Y | | | |
| B | Programmed | The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). | Y | Inorganics | Metals | Replaces J Estimated Value |
| D | Programmed | Results are reported from a diluted aliquot of sample. | Y | | | Dilution |
| E | Programmed | Reported value is estimated due to interferences. See comment in narrative. | Y | Inorganics | Metals | GEL E |
| M | Manual | Duplicate precision not met. | Y | Inorganics | Metals | Replaces * |
| o | Programmed | Analyte failed to recover within LCS limits (Organics only) | Y | Organics | | |
| S | Manual | Reported value determined by the Method of Standard Additions (MSA) | Y | Inorganics | | Not coded B/C Rarely preformed |
| T | Programmed | Spike and/or spike duplicate sample recovery is outside control limits. | Y | Organics | | GC/MS only |
| W | Manual | Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency. | Y | Inorganics | | No GFAA in house. |
| B | Programmed | The associated QC sample blank has a result >= 2X the MDA and, after corrections, result is >= MDA for this sample | Y | Radiological | | |
| Y | Manual | Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier | Y | | | |
| + | Manual | Correlation coefficient for Method of Standard Additions (MSA) is < 0.995 | Y | Inorganics | | |
| B | Programmed | The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). | Y | General Chemistry | | Replaces J Estimated Value |
| C | Programmed | Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples. | Y | Inorganics | Metals | Replaces B Blank Detection |
| C | Programmed | Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples. | Y | General Chemistry | | Replaces B Blank Detection |
| < | Programmed | Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide | Y | General Chemistry | | for Reactive CN/S |

Project Specific Qualifier Definitions for GEL Client Code: CPRC

| Code | Status | Qualifier Definition | CofA | Department | Fraction | Additional Comments |
|------|--------|--|------|--------------|----------|---------------------|
| UX | Manual | Gamma Spectroscopy--Uncertain identification | Y | Radiological | | |

Laboratory Certifications

List of current GEL Certifications as of 05 June 2015

| State | Certification |
|--------------------------|------------------------------|
| Alaska | UST-110 |
| Arkansas | 88-0651 |
| CLIA | 42D0904046 |
| California | 2940 Interim |
| Colorado | SC00012 |
| Connecticut | PH-0169 |
| Delaware | SC000122013-10 |
| DoD ELAP/ ISO17025 A2LA | 2567.01 |
| Florida NELAP | E87156 |
| Foreign Soils Permit | P330-12-00283, P330-12-00284 |
| Georgia | SC00012 |
| Georgia SDWA | 967 |
| Hawaii | SC000122013-10 |
| Idaho Chemistry | SC00012 |
| Idaho Radiochemistry | SC00012 |
| Illinois NELAP | 200029 |
| Indiana | C-SC-01 |
| Kansas NELAP | E-10332 |
| Kentucky SDWA | 90129 |
| Kentucky Wastewater | 90129 |
| Louisiana NELAP | 03046 (AI33904) |
| Louisiana SDWA | LA150001 |
| Maryland | 270 |
| Massachusetts | M-SC012 |
| Michigan | 9976 |
| Mississippi | SC000122013-10 |
| Nebraska | NE-OS-26-13 |
| Nevada | SC000122014-1 |
| New Hampshire NELAP | 2054 |
| New Jersey NELAP | SC002 |
| New Mexico | SC00012 |
| New York NELAP | 11501 |
| North Carolina | 233 |
| North Carolina SDWA | 45709 |
| Oklahoma | 9904 |
| Pennsylvania NELAP | 68-00485 |
| Plant Material Permit | PDEP-12-00260 |
| S.Carolina Radchem | 10120002 |
| South Carolina Chemistry | 10120001 |
| Tennessee | TN 02934 |
| Texas NELAP | T104704235-15-10 |
| Utah NELAP | SC000122015-17 |
| Vermont | VT87156 |
| Virginia NELAP | 460202 |
| Washington | C780 |

General Chem Analysis

Case Narrative

June 09, 2015

**General Chemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL372924
Work Order #: 372924**

Method/Analysis Information

Product: Ion Chromatography

Analytical Batch: 1478371

Method: 9056_ANIONS_IC: COMMON

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 9056A:

| Sample ID | Client ID |
|------------------|--|
| 372924001 | B30XV0 |
| 372924002 | B30XV1 |
| 1203317732 | Method Blank (MB) |
| 1203317733 | Laboratory Control Sample (LCS) |
| 1203317734 | 372924002(B30XV1) Sample Duplicate (DUP) |
| 1203317735 | 372924002(B30XV1) Post Spike (PS) |

The samples in this SDG were analyzed on an "as received" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-086 REV# 24.

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information

The Ion Chromatography analysis was performed on a Dionex ICS-3000 Ion Chromatograph.

Initial Calibration

All initial calibration requirements have been met for this SDG.

Continuing Calibration Blanks

All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

Calibration Verification Information (CCV)

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

Y Intercept Rule

The absolute value of the intercept is less than 3 times the MDL.

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Sample 372924002 (B30XV1) was selected for QC analysis.

Matrix Spike (MS)/Post Spike (PS) Recovery Statement

The MS/PS recoveries for this sample set were within the required acceptance limits.

Duplicate Relative Percent Difference (RPD) Statement

The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times

All samples in this SDG met the specified holding time.

Sample Dilutions

The following samples were diluted because target analyte concentrations exceeded the calibration range. 1203317734 (B30XV1DUP), 1203317735 (B30XV1PS) and 372924002 (B30XV1). The following samples in this sample group were diluted due to matrix interference. 1203317734 (B30XV1DUP), 1203317735 (B30XV1PS) and 372924002 (B30XV1).

| Analyte | 372924 | |
|----------|--------|-----|
| | 001 | 002 |
| Chloride | 1X | 10X |
| Nitrate | 1X | 10X |
| Sulfate | 1X | 10X |

Sample Re-analysis

The samples in this SDG did not require re-analysis.

Miscellaneous Information

Data Exception (DER) Documentation

Data exception reports (DERs) are generated to document procedural anomalies that may deviate from referenced

SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Manual Integrations

Samples 1203317734 (B30XV1DUP), 1203317735 (B30XV1PS), 372924001 (B30XV0) and 372924002 (B30XV1) were manually integrated to correctly position the baseline as set in the calibration standards.

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

June 09, 2015

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Qualifier Definition Report for

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL372924 GEL Work Order: 372924

The Qualifiers in this report are defined as follows:

B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).

D Results are reported from a diluted aliquot of sample.

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature:



Name: Jamie Johnson

Date: 05 JUN 2015

Title: Group Leader

Sample Data Summary

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: June 5, 2015

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF I15-025

Client Sample ID: B30XV0
Sample ID: 372924001
Matrix: WATER
Collect Date: 12-MAY-15 07:30
Receive Date: 13-MAY-15
Collector: Client

Project: CPRC0I15025
Client ID: CPRC001

| Parameter | Qualifier | Result | DL | RL | Units | DF | Analyst | Date | Time | Batch | Method |
|--------------------------------------|-----------|--------|------|-----|-------|----|---------|----------|------|---------|--------|
| Ion Chromatography | | | | | | | | | | | |
| 9056_ANIONS_IC: COMMON "As Received" | | | | | | | | | | | |
| Chloride | B | 86.2 | 67.0 | 200 | ug/L | 1 | MXL2 | 05/13/15 | 2153 | 1478371 | 1 |
| Fluoride | U | 33.0 | 33.0 | 500 | ug/L | 1 | | | | | |
| Nitrate-N | U | 33.0 | 33.0 | 250 | ug/L | 1 | | | | | |
| Nitrite-N | U | 38.0 | 38.0 | 250 | ug/L | 1 | | | | | |
| Sulfate | B | 179 | 133 | 500 | ug/L | 1 | | | | | |

The following Analytical Methods were performed:

| Method | Description | Analyst Comments |
|--------|-------------|------------------|
| 1 | SW846 9056A | |

Notes:

~~June 09, 2015~~
GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: June 5, 2015

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF I15-025

| | |
|-------------------------------|----------------------|
| Client Sample ID: B30XV1 | Project: CPRC0I15025 |
| Sample ID: 372924002 | Client ID: CPRC001 |
| Matrix: WATER | |
| Collect Date: 12-MAY-15 11:23 | |
| Receive Date: 13-MAY-15 | |
| Collector: Client | |

| Parameter | Qualifier | Result | DL | RL | Units | DF | Analyst | Date | Time | Batch | Method |
|--------------------------------------|-----------|--------|------|------|-------|----|---------|----------|------|---------|--------|
| Ion Chromatography | | | | | | | | | | | |
| 9056_ANIONS_IC: COMMON "As Received" | | | | | | | | | | | |
| Fluoride | B | 323 | 33.0 | 500 | ug/L | 1 | MXL2 | 05/13/15 | 2225 | 1478371 | 1 |
| Nitrite-N | U | 38.0 | 38.0 | 250 | ug/L | 1 | | | | | |
| Chloride | D | 24300 | 670 | 2000 | ug/L | 10 | MXL2 | 05/14/15 | 0312 | 1478371 | 2 |
| Nitrate-N | D | 5280 | 330 | 1000 | ug/L | 10 | | | | | |
| Sulfate | D | 32500 | 1330 | 4000 | ug/L | 10 | | | | | |

The following Analytical Methods were performed:

| Method | Description | Analyst Comments |
|--------|-------------|------------------|
| 1 | SW846 9056A | |
| 2 | SW846 9056A | |

Notes:

Quality Control Summary

June 09, 2015
GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: June 5, 2015

Page 1 of 2

CH2MHill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 372924

| Parmname | NOM | Sample | Qual | QC | Units | RPD% | REC% | Range | Anlst | Date | Time |
|---------------------------|-----------|--------|-------|-------|-------|--------|------|------------|------------|----------|-------|
| Ion Chromatography | | | | | | | | | | | |
| Batch | 1478371 | | | | | | | | | | |
| QC1203317734 | 372924002 | DUP | | | | | | | | | |
| Chloride | D | 24300 | D | 24300 | ug/L | 0.0412 | | (0%-20%) | MXL2 | 05/14/15 | 03:44 |
| Fluoride | B | 323 | B | 328 | ug/L | 1.54 | ^ | (+/-500) | | 05/13/15 | 22:57 |
| Nitrate-N | D | 5280 | D | 5340 | ug/L | 1.21 | | (0%-20%) | | 05/14/15 | 03:44 |
| Nitrite-N | U | 38.0 | U | 38.0 | ug/L | N/A | | | | 05/13/15 | 22:57 |
| Sulfate | D | 32500 | D | 36400 | ug/L | 11.2 | | (0%-20%) | | 05/14/15 | 03:44 |
| QC1203317733 | LCS | | | | | | | | | | |
| Chloride | 5000 | | | 4800 | ug/L | | 96 | (90%-110%) | | 05/13/15 | 19:45 |
| Fluoride | 2500 | | | 2520 | ug/L | | 101 | (90%-110%) | | | |
| Nitrate-N | 2500 | | | 2470 | ug/L | | 98.7 | (90%-110%) | | | |
| Nitrite-N | 2500 | | | 2560 | ug/L | | 102 | (90%-110%) | | | |
| Sulfate | 10000 | | | 9970 | ug/L | | 99.7 | (90%-110%) | | | |
| QC1203317732 | MB | | | | | | | | | | |
| Chloride | | | U | 67.0 | ug/L | | | | | 05/13/15 | 19:13 |
| Fluoride | | | U | 33.0 | ug/L | | | | | | |
| Nitrate-N | | | U | 33.0 | ug/L | | | | | | |
| Nitrite-N | | | U | 38.0 | ug/L | | | | | | |
| Sulfate | | | U | 133 | ug/L | | | | | | |
| QC1203317735 | 372924002 | PS | | | | | | | | | |
| Chloride | 5.00 | D | 2.43 | D | 7.41 | mg/L | | 99.7 | (90%-110%) | 05/14/15 | 04:15 |
| Fluoride | 2.50 | B | 0.323 | | 2.79 | mg/L | | 98.8 | (90%-110%) | 05/13/15 | 23:29 |
| Nitrate-N | 2.50 | D | 0.528 | D | 2.96 | mg/L | | 97.5 | (90%-110%) | 05/14/15 | 04:15 |

June 09, 2015
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QC Summary

Workorder: 372924

Page 2 of 2

| Parmname | NOM | | Sample | Qual | QC | Units | RPD% | REC% | Range | Anlst | Date | Time |
|---------------------------|---------|---|--------|------|------|-------|------|------|------------|-------|----------|-------|
| Ion Chromatography | | | | | | | | | | | | |
| Batch | 1478371 | | | | | | | | | | | |
| Nitrite-N | 2.50 | U | 0.00 | | 2.50 | mg/L | | 100 | (90%-110%) | | 05/13/15 | 23:29 |
| Sulfate | 10.0 | D | 3.25 | D | 13.4 | mg/L | | 101 | (90%-110%) | MXL2 | 05/14/15 | 04:15 |

Notes:

The Qualifiers in this report are defined as follows:

- < Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
- > Result greater than quantifiable range or greater than upper limit of the analysis range
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is \geq EQ or is $> 5\%$ of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.
- N Spike Sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of \pm the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Radiological Analysis

June 09, 2015
Radiochemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL372924
Work Order #: 372924

Method/Analysis Information

Product: I129LL_SEP_LEPS_GS: COMMON (low level)

Analytical Method: DOE EML HASL-300,I-01 Modified

Analytical Batch Number: 1477222

| Sample ID | Client ID |
|------------------|--|
| 372924003 | B30XT8 |
| 372924004 | B30XT9 |
| 1203314577 | Method Blank (MB) |
| 1203314580 | Laboratory Control Sample (LCS) |
| 1203314578 | 372413001(B30XR8) Sample Duplicate (DUP) |
| 1203314579 | 372413001(B30XR8) Matrix Spike (MS) |

The samples in this SDG were analyzed on an "as received" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-006 REV# 21.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information

The blank volume is representative of the sample volume in this batch.

Designated QC

The following sample was used for QC: 372413001 (B30XR8).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Recounts

None of the samples in this sample set were recounted.

Miscellaneous Information:

Data Exception (DER) Documentation

Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Sample-Specific MDA/MDC

The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: KPA_UTOT: COMMON
Analytical Method: ASTM D 5174
Analytical Batch Number: 1479896

| Sample ID | Client ID |
|------------------|--|
| 372924003 | B30XT8 |
| 372924004 | B30XT9 |
| 1203321896 | Method Blank (MB) |
| 1203321899 | Laboratory Control Sample (LCS) |
| 1203321900 | Laboratory Control Sample (LCS) |
| 1203321897 | 372924004(B30XT9) Sample Duplicate (DUP) |
| 1203321898 | 372924004(B30XT9) Matrix Spike (MS) |

The samples in this SDG were analyzed on an "as received" basis.

June 09, 2015

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-023 REV# 19.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met. The calibration for Total Uranium is performed prior to each analysis and is located with the raw data.

Standards Information

Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information

The blank volume is representative of the sample volume in this batch.

Designated QC

The following sample was used for QC: 372924004 (B30XT9).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis

Sample 372924004 (B30XT9) was treated with a post-spike due to contractual requirements and reanalyzed to test for quenching. The post-spike verified the initial result, so the initial result is reported. Sample 372924003 (B30XT8) failed R2 and/or lifetime, was treated with a post-spike due to contractual requirements, and reanalyzed to test for quenching. The post-spike verified the initial result, so the initial result is reported.

Recounts

None of the samples in this sample set were recounted.

Miscellaneous Information:

Data Exception (DER) Documentation

Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Sample-Specific MDA/MDC

The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments

MB 1203321896 (MB) failed R2 and/or lifetime. This was due to insufficient uranium in the sample for measurement. The results are reported.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: TC99_EIE_LSC: COMMON
Analytical Method: DOE EML HASL-300, Tc-02-RC Modified
Analytical Batch Number: 1480739

| Sample ID | Client ID |
|------------------|--|
| 372924003 | B30XT8 |
| 372924004 | B30XT9 |
| 1203324211 | Method Blank (MB) |
| 1203324213 | Laboratory Control Sample (LCS) |
| 1203324212 | 373500002(B31016) Sample Duplicate (DUP) |

The samples in this SDG were analyzed on an "as received" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-059 REV# 3.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information

The blank volume is representative of the sample volume in this batch.

Designated QC

The following sample was used for QC: 373500002 (B31016).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Recounts

Samples 1203324212 (Non SDG 373500002DUP) and 372924004 (B30XT9) were recounted to verify sample results. The recount results are similar to the original results. Original results are reported.

Miscellaneous Information:

Data Exception (DER) Documentation

Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Sample-Specific MDA/MDC

The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: TRITIUM_DIST_LSC: COMMON

Analytical Method: EPA 906.0 Modified

Analytical Batch Number: 1481853

| Sample ID | Client ID |
|------------|--|
| 372924003 | B30XT8 |
| 372924004 | B30XT9 |
| 1203327037 | Method Blank (MB) |
| 1203327040 | Laboratory Control Sample (LCS) |
| 1203327038 | 373190003(B30Y56) Sample Duplicate (DUP) |
| 1203327039 | 373190003(B30Y56) Matrix Spike (MS) |

The samples in this SDG were analyzed on an "as received" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with

GL-RAD-A-002 REV# 21.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information

The blank volume is representative of the sample volume in this batch.

Designated QC

The following sample was used for QC: 373190003 (B30Y56).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Recounts

None of the samples in this sample set were recounted.

Miscellaneous Information:

Data Exception (DER) Documentation

Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Sample-Specific MDA/MDC

The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Certification Statement

June 09, 2015

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

June 09, 2015

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL372924 GEL Work Order: 372924

The Qualifiers in this report are defined as follows:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: 

Name: Theresa Austin

Date: 09 JUN 2015

Title: Group Leader

Sample Data Summary

June 09, 2015

Certificate of Analysis
Sample Summary

SDG Number: GEL372924

Lab Sample ID: 372924003

Client ID: B30XT8

Batch ID: 1477222

Run Date: 05/20/2015 06:50

Data File: I372924003.CNF;1

Prep Batch: 1477222

Prep Date: 05/18/2015 00:00

Client: CPRC001

Date Collected: 05/12/2015 07:30

Date Received: 05/13/2015 08:45

Method: DOE EML HASL-300,I-01 Mo

Analyst: MJH1

Aliquot: 1.8 L

Prep Method: DOE EML HASL-300,I-01 M

Project: CPRC01I5025

Matrix: WATER

Prep Basis: As Received

SOP Ref: GL-RAD-A-006

Instrument: XRAY3

Count Time: 30 min

| CAS No. | Parmname | Qual | Result | Units | Uncert | TPU | MDC | RDL |
|------------|------------|------|--------|-------|----------|-------|-------|------|
| 15046-84-1 | Iodine-129 | U | 0.286 | pCi/L | +/-0.297 | 0.325 | 0.922 | 1.00 |

| Surrogate/Tracer recovery | Result | Nominal | Units | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-------|-----------|-------------------|
|---------------------------|--------|---------|-------|-----------|-------------------|

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

June 09, 2015

Certificate of Analysis
Sample Summary

SDG Number: GEL372924
Lab Sample ID: 372924003

Client: CPRC001
Date Collected: 05/12/2015 07:30
Date Received: 05/13/2015 08:45

Project: CPRC0115025
Matrix: WATER

Client ID: B30XT8
Batch ID: 1480739
Run Date: 06/07/2015 10:45
Data File: E1480739.xls
Prep Batch: 1480739
Prep Date: 06/02/2015 00:00

Method: DOE EML HASL-300, Tc-02-
Analyst: MYM1
Aliquot: 0.3 L
Prep Method: DOE EML HASL-300, Tc-02-

Prep Basis: As Received
SOP Ref: GL-RAD-A-059
Instrument: LSCSILVER
Count Time: 35 min

| CAS No. | Parmname | Qual | Result | Units | Uncert | TPU | MDC | RDL |
|------------|---------------|------|--------|-------|---------|------|------|------|
| 14133-76-7 | Technetium-99 | U | -4.46 | pCi/L | +/-4.79 | 4.79 | 8.50 | 15.0 |

| Surrogate/Tracer recovery | Result | Nominal | Units | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-------|-----------|-------------------|
| Technetium-99m Tracer | 46700 | 47100 | CPM | 99.2 | (15%-125%) |

Comments:
U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

June 09, 2015

Certificate of Analysis
Sample Summary

SDG Number: GEL372924
Lab Sample ID: 372924003

Client: CPRC001
Date Collected: 05/12/2015 07:30
Date Received: 05/13/2015 08:45

Project: CPRC0115025
Matrix: WATER

Client ID: B30XT8
Batch ID: 1481853
Run Date: 06/04/2015 09:37
Data File: T1481853.xls
Prep Batch: 1481853
Prep Date: 06/03/2015 00:00

Method: EPA 906.0 Modified
Analyst: GXR1
Aliquot: 50 mL
Prep Method: EPA 906.0 Modified

Prep Basis: As Received
SOP Ref: GL-RAD-A-002
Instrument: LSCORANGE
Count Time: 120.0297 min

| CAS No. | Parmname | Qual | Result | Units | Uncert | TPU | MDC | RDL |
|------------|----------|------|--------|-------|---------|------|------|-----|
| 10028-17-8 | Tritium | U | -7.44 | pCi/L | +/-43.4 | 43.4 | 78.1 | 100 |

| Surrogate/Tracer recovery | Result | Nominal | Units | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-------|-----------|-------------------|
|---------------------------|--------|---------|-------|-----------|-------------------|

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

June 09, 2015

Certificate of Analysis
Sample Summary

SDG Number: GEL372924

Lab Sample ID: 372924003

Client ID: B30XT8

Batch ID: 1479896

Run Date: 06/02/2015 07:19

Data File: U1479896.xls

Prep Batch: 1479896

Prep Date: 05/28/2015 00:00

Client: CPRC001

Date Collected: 05/12/2015 07:30

Date Received: 05/13/2015 08:45

Method: ASTM D 5174

Analyst: BXF1

Aliquot: 5 mL

Prep Method: ASTM D 5174

Project: CPRC0115025

Matrix: WATER

Prep Basis: As Received

SOP Ref: GL-RAD-A-023

Instrument: KPA11AUTO1

Count Time:

| CAS No. | Parmname | Qual | Result | Units | Uncert | TPU | MDC | RDL |
|-----------|---------------|------|--------|-------|-----------|--------|-------|------|
| 7440-61-1 | Total Uranium | U | 0.0585 | ug/L | +/-0.0127 | 0.0136 | 0.253 | 1.00 |

| Surrogate/Tracer recovery | Result | Nominal | Units | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-------|-----------|-------------------|
|---------------------------|--------|---------|-------|-----------|-------------------|

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

June 09, 2015

Certificate of Analysis
Sample Summary

SDG Number: GEL372924

Lab Sample ID: 372924004

Client ID: B30XT9

Batch ID: 1477222

Run Date: 05/20/2015 06:57

Data File: I372924004.CNF;1

Prep Batch: 1477222

Prep Date: 05/18/2015 00:00

Client: CPRC001

Date Collected: 05/12/2015 11:23

Date Received: 05/13/2015 08:45

Method: DOE EML HASL-300,I-01 Mo

Analyst: MJH1

Aliquot: 1.8 L

Prep Method: DOE EML HASL-300,I-01 M

Project: CPRC01I5025

Matrix: WATER

Prep Basis: As Received

SOP Ref: GL-RAD-A-006

Instrument: XRAY4

Count Time: 30 min

| CAS No. | Parmname | Qual | Result | Units | Uncert | TPU | MDC | RDL |
|------------|------------|------|---------|-------|----------|-------|------|------|
| 15046-84-1 | Iodine-129 | U | -0.0671 | pCi/L | +/-0.555 | 0.555 | 1.11 | 1.00 |

| Surrogate/Tracer recovery | Result | Nominal | Units | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-------|-----------|-------------------|
|---------------------------|--------|---------|-------|-----------|-------------------|

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

June 09, 2015

Certificate of Analysis
Sample Summary

SDG Number: GEL372924

Lab Sample ID: 372924004

Client ID: B30XT9

Batch ID: 1480739

Run Date: 06/07/2015 11:23

Data File: E1480739.xls

Prep Batch: 1480739

Prep Date: 06/02/2015 00:00

Client: CPRC001

Date Collected: 05/12/2015 11:23

Date Received: 05/13/2015 08:45

Method: DOE EML HASL-300, Tc-02-

Analyst: MYM1

Aliquot: 0.3 L

Prep Method: DOE EML HASL-300, Tc-02-

Project: CPRC01I5025

Matrix: WATER

Prep Basis: As Received

SOP Ref: GL-RAD-A-059

Instrument: LSCSILVER

Count Time: 35 min

| CAS No. | Parmname | Qual | Result | Units | Uncert | TPU | MDC | RDL |
|------------|---------------|------|--------|-------|---------|------|------|------|
| 14133-76-7 | Technetium-99 | | 10.3 | pCi/L | +/-5.44 | 5.56 | 8.87 | 15.0 |

| Surrogate/Tracer recovery | Result | Nominal | Units | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-------|-----------|-------------------|
| Technetium-99m Tracer | 45100 | 47100 | CPM | 95.8 | (15%-125%) |

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

June 09, 2015

Certificate of Analysis
Sample Summary

SDG Number: GEL372924
Lab Sample ID: 372924004

Client: CPRC001
Date Collected: 05/12/2015 11:23
Date Received: 05/13/2015 08:45

Project: CPRC0115025
Matrix: WATER

Client ID: B30XT9
Batch ID: 1481853
Run Date: 06/04/2015 11:40
Data File: T1481853.xls
Prep Batch: 1481853
Prep Date: 06/03/2015 00:00

Method: EPA 906.0 Modified
Analyst: GXR1
Aliquot: 50 mL
Prep Method: EPA 906.0 Modified

Prep Basis: As Received
SOP Ref: GL-RAD-A-002
Instrument: LSCORANGE
Count Time: 120.0297 min

| CAS No. | Parmname | Qual | Result | Units | Uncert | TPU | MDC | RDL |
|------------|----------|------|--------|-------|---------|------|------|-----|
| 10028-17-8 | Tritium | U | 40.4 | pCi/L | +/-46.9 | 47.5 | 78.9 | 100 |

| Surrogate/Tracer recovery | Result | Nominal | Units | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-------|-----------|-------------------|
|---------------------------|--------|---------|-------|-----------|-------------------|

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

June 09, 2015

Certificate of Analysis
Sample Summary

SDG Number: GEL372924

Lab Sample ID: 372924004

Client ID: B30XT9

Batch ID: 1479896

Run Date: 06/02/2015 07:22

Data File: U1479896.xls

Prep Batch: 1479896

Prep Date: 05/28/2015 00:00

Client: CPRC001

Date Collected: 05/12/2015 11:23

Date Received: 05/13/2015 08:45

Method: ASTM D 5174

Analyst: BXF1

Aliquot: 5 mL

Prep Method: ASTM D 5174

Project: CPRC0115025

Matrix: WATER

Prep Basis: As Received

SOP Ref: GL-RAD-A-023

Instrument: KPA11AUTO1

Count Time:

| CAS No. | Parmname | Qual | Result | Units | Uncert | TPU | MDC | RDL |
|---------------------------|---------------|------|--------|---------|-----------|-----------|-------------------|------|
| 7440-61-1 | Total Uranium | | 1.07 | ug/L | +/-0.0338 | 0.0943 | 0.253 | 1.00 |
| Surrogate/Tracer recovery | | | Result | Nominal | Units | Recovery% | Acceptable Limits | |

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Quality Control Data

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: June 9, 2015
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Client : CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352

Contact: Mr. Scot Fitzgerald

Workorder: 372924

| Parmname | NOM | Sample | Qual | QC | Units | QC Criteria | Range | Analyst | Date | Time |
|---------------------------------|-----------|--------|---------|----------|----------|-------------|--------|------------|---------------|---------------|
| Rad Gamma Spec | | | | | | | | | | |
| Batch | 1477222 | | | | | | | | | |
| QC1203314577 | MB | | | | | | | | | |
| Iodine-129 | | | U | -0.169 | pCi/L | | | MJH1 | 05/20/1507:04 | |
| | | | | Uncert: | | | | | | |
| | | | | TPU: | | | | | | |
| QC1203314578 | 372413001 | DUP | | | | | | | | |
| Iodine-129 | | U | -0.0216 | U | 0.0207 | pCi/L | | | 05/20/1507:23 | |
| | | | Uncert: | +/-0.138 | +/-0.317 | RPD: | 0 | N/A | | |
| | | | TPU: | +/-0.139 | +/-0.317 | RER: | 0.240 | (0-2) | | |
| QC1203314579 | 372413001 | MS | | | | | | | | |
| Iodine-129 | | 23.1 | U | -0.0216 | 21.0 | pCi/L | REC: | 91 | (75%-125%) | 05/20/1507:31 |
| | | | Uncert: | +/-0.138 | +/-3.57 | | | | | |
| | | | TPU: | +/-0.139 | +/-4.14 | | | | | |
| QC1203314580 | LCS | | | | | | | | | |
| Iodine-129 | | 23.1 | | 21.4 | pCi/L | REC: | 93 | (80%-120%) | 05/20/1507:31 | |
| | | | Uncert: | +/-3.22 | | | | | | |
| | | | TPU: | +/-3.86 | | | | | | |
| Rad Liquid Scintillation | | | | | | | | | | |
| Batch | 1480739 | | | | | | | | | |
| QC1203324211 | MB | | | | | | | | | |
| Technetium-99 | | | U | -3.04 | pCi/L | | | MYM1 | 06/07/1515:09 | |
| | | | | Uncert: | +/-4.95 | | | | | |
| | | | | TPU: | +/-4.95 | | | | | |
| **Technetium-99m Tracer | 47100 | | | 45500 | CPM | REC: | 97 | (15%-125%) | | |
| QC1203324212 | 373500002 | DUP | | | | | | | | |
| Technetium-99 | | 52900 | | 52600 | pCi/L | | | | 06/07/1515:45 | |
| | | | Uncert: | +/-1030 | +/-1030 | RPD: | 1 | (0% - 20%) | | |
| | | | TPU: | +/-5960 | +/-5930 | RER: | 0.0694 | (0-2) | | |
| **Technetium-99m Tracer | 47100 | 44900 | | 45000 | CPM | REC: | 96 | (15%-125%) | | |
| QC1203324213 | LCS | | | | | | | | | |
| Technetium-99 | | 287 | | 250 | pCi/L | REC: | 87 | (80%-120%) | 06/07/1515:48 | |
| | | | Uncert: | +/-9.81 | | | | | | |
| | | | TPU: | +/-29.4 | | | | | | |
| **Technetium-99m Tracer | 47100 | | | 46900 | CPM | REC: | 100 | (15%-125%) | | |
| Batch | 1481853 | | | | | | | | | |
| QC1203327037 | MB | | | | | | | | | |
| Tritium | | | U | -14.5 | pCi/L | | | GXR1 | 06/05/1507:18 | |
| | | | | Uncert: | +/-42.8 | | | | | |
| | | | | TPU: | +/-42.8 | | | | | |
| QC1203327038 | 373190003 | DUP | | | | | | | | |
| Tritium | | 2060 | | 1890 | pCi/L | | | | 06/05/1509:21 | |
| | | | Uncert: | +/-122 | +/-114 | RPD: | 9 | (0% - 20%) | | |
| | | | TPU: | +/-416 | +/-383 | RER: | 0.583 | (0-2) | | |
| QC1203327039 | 373190003 | MS | | | | | | | | |
| Tritium | | 1840 | 2060 | 3840 | pCi/L | REC: | 97 | (75%-125%) | 06/05/1511:24 | |

QC Summary

Workorder: 372924

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| Parmname | NOM | Sample | Qual | QC | Units | QC Criteria | Range | Analyst | Date | Time |
|---------------------------------|-----------|---------|-----------|-----------|-------|-------------|-------------|---------|---------------|------|
| Rad Liquid Scintillation | | | | | | | | | | |
| Batch | 1481853 | | | | | | | | | |
| | | Uncert: | +/-122 | +/-436 | | | | | | |
| | | TPU: | +/-416 | +/-861 | | | | | | |
| QC1203327040 | LCS | | | | | | | | | |
| Tritium | 1830 | | | 1790 | pCi/L | REC: 98 | (80%-120%) | | 06/05/1511:41 | |
| | | Uncert: | | +/-305 | | | | | | |
| | | TPU: | | +/-461 | | | | | | |
| Rad Total U | | | | | | | | | | |
| Batch | 1479896 | | | | | | | | | |
| QC1203321896 | MB | | | | | | | | | |
| Total Uranium | | | U | 0.0562 | ug/L | | | BXF1 | 06/02/1507:24 | |
| | | Uncert: | | +/-0.0193 | | | | | | |
| | | TPU: | | +/-0.0198 | | | | | | |
| QC1203321897 | 372924004 | DUP | | | | | | | | |
| Total Uranium | | 1.07 | | 1.09 | ug/L | | | | 06/02/1507:27 | |
| | | Uncert: | +/-0.0338 | +/-0.0352 | | RPD: 2 | (0% - 100%) | | | |
| | | TPU: | +/-0.0943 | +/-0.0963 | | RER: 0.276 | (0-2) | | | |
| QC1203321898 | 372924004 | MS | | | | | | | | |
| Total Uranium | 50.0 | 1.07 | | 51.2 | ug/L | REC: 100 | (75%-125%) | | 06/02/1507:31 | |
| | | Uncert: | +/-0.0338 | +/-3.38 | | | | | | |
| | | TPU: | +/-0.0943 | +/-5.41 | | | | | | |
| QC1203321899 | LCS | | | | | | | | | |
| Total Uranium | 50.0 | | | 49.8 | ug/L | REC: 100 | (80%-120%) | | 06/02/1507:35 | |
| | | Uncert: | | +/-3.19 | | | | | | |
| | | TPU: | | +/-5.20 | | | | | | |
| QC1203321900 | LCS | | | | | | | | | |
| Total Uranium | 5.00 | | | 5.09 | ug/L | REC: 102 | (80%-120%) | | 06/02/1507:36 | |
| | | Uncert: | | +/-0.154 | | | | | | |
| | | TPU: | | +/-0.447 | | | | | | |

Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

- < Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
- > Result greater than quantifiable range or greater than upper limit of the analysis range
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- B The associated QC sample blank has a result $\geq 2X$ the MDA and, after corrections, result is \geq MDA for this sample
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is \geq EQL or is $> 5\%$ of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.
- N Spike Sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- UX Gamma Spectroscopy--Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

QC Summary

Workorder: 372924

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| Parmname | NOM | Sample | Qual | QC | Units | QC Criteria | Range | Analyst | Date | Time |
|----------|-----|--------|------|----|-------|-------------|-------|---------|------|------|
|----------|-----|--------|------|----|-------|-------------|-------|---------|------|------|

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

** Indicates analyte is a surrogate compound.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.